APPENDIX B

PROJECT-SPECIFIC HEALTH AND SAFETY PLAN
FOR
SOIL VAPOR SURVEY WORK PLAN

SUBSURFACE INTERIM MEASURES/
INTERIM REMEDIAL ACTION
903 PAD, MOUND, AND
EAST TRENCHES AREAS

OPERABLE UNIT NO. 2

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

FINAL

13 May 1993

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HEALTH AND SAFETY PLAN
SOIL VAPOR SURVEY
SUBSURFACE IM/IRA

Review and Approval Signatures:

ER Health and Safety Officer	Date
ER Program Manager	Date
Director - Environmental Restoration	Date
Health and Safety Liaison Officer	Date
Occupational Safety Manager	Date
Director - Health and Safety	Date
EG&G Project Manager	Date
Subcontractor Project Manager	Date

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LIST OF ACRONYMS

ALARA	as low as reasonably achievable
CRC	contamination reduction center
CFR	Code of Federal Regulations
CRC	contamination reduction corridor
CRZ	contamination reduction zone
dBA	decibels on the "A" weighted scale
DOT	U.S. Department of Transportation
EG&G	EG&G - Rocky Flats, Inc.
EMRG	Environmental Management Radiological Guidelines
ER	Environmental Restoration
EZ	exclusion zone
HSL	health and safety liaison
HSS	health and safety specialist
IHSS	individual hazardous substance sites
OU2	Operable Unit No. 2
OSHA	Occupational Safety and Health Administration or Act
PCE	tetrachloroethylene (perchloroethylene)
pCi	picocuries
PEL	permissible exposure limit
PID	photoionization detector
PPE	personal protective equipment
PSHSP	project-specific health and safety plan
RCA	radiologically controlled area
RFP	Rocky Flats Plant
RPT	radiation protection technician
RWP	radiation work permit
SHSO	site health and safety officer
SVS	soil vapor survey
SZ	support zone
TCE	trichloroethylene
TSP	total suspended particulate matter
VOC	volatile organic compound

SECTION B 1
INTRODUCTION

This Project-Specific Health and Safety Plan (PSHSP) provides detailed health and safety guidance for a project planned to investigate the presence of volatile organic compounds (VOCs) in soil gas at the 903 Pad, Mound, and East Trenches Areas at the Rocky Flats Plant (RFP).

This plan is written as an addendum to the previously approved health and safety plan issued by EG&G-Rocky Flats, Inc. (EG&G) for environmental work at Operable Unit No. 2 (OU 2) entitled "Health and Safety Plan for Phase II RCRA Facility Investigation/Remedial Investigation at the 903 Pad, Mound, and East Trenches Areas" (EG&G, 1991b).

A written copy of this PSHSP must be present on site. The contents of this PSHSP must be discussed and understood by all personnel prior to beginning each day's work (site safety briefing). A final visual and paperwork check of site hazards will be made to ensure that all safety concerns have been addressed.

This PSHSP will become final when it is completed and/or modified by the subcontractor hired to conduct the work, and subsequently approved by EG&G. Items necessary to complete this PSHSP include:

- Identification of the subcontractor's project manager, Site Health and Safety Officer (SHSO), and Health and Safety Specialist (HSS) including their relevant credentials.
- Clarification and approval of the subcontractor's emergency response and medical surveillance programs including identification of emergency hospital services.
- A specific listing of all personnel to be used on the project by the subcontractor including documentation of all required training.
- Clarification of the subcontractor's air monitoring responsibilities.
- Verification and approval of the subcontractor's personal protection program.

- A complete assessment of the physical, chemical, biological, and radiological hazards that are expected to be encountered during the execution of the soil vapor survey (SVS); and the procedures which are necessary to mitigate these hazards.

Information provided by the subcontractor for the six items listed above will be reviewed by the EG&G project health and safety team. The health and safety team members include the Health and Safety Liaison, the Health and Safety Coordinator, and the Health and Safety Area Administrator (see Section B 2). Authorization for the subcontractor to proceed with the SVS field work is contingent upon EG&G approval of the subcontractor-completed PSHSP.

The EG&G-approved health and safety plan for OU2 (EG&G, 1991) must be reviewed by all site personnel in conjunction with this PSHSP. The Plan includes sections on:

- EG&G policy for environmental restoration work conducted at OU2.
- Description of specific locations within OU2.
- Assignment of EG&G health and safety personnel and responsibilities.
- Hazard assessment of OU2 locations including chemical, radiological, physical, biological, and mechanical hazards.
- The EG&G hazard communications program.
- Site control requirements.
- Personal protective equipment (PPE) requirements.
- Decontamination procedures.
- Medical surveillance.
- Air monitoring, training, and emergency response requirements.
- Material handling.

Details of the work to be conducted are described in the "Soil Vapor Survey Work Plan, Subsurface Interim Measures/Interim Remedial Action - Operable Unit No. 2" (EG&G, 1993).

A summary of the areas in which the SVS will be conducted is included in Section B 3 of this PSHSP. Section B 4 summarizes the soil vapor survey methods used and the potential hazards present. Additional sections of this PSHSP describe the contractor's health and safety action plan including the elements of site control, PPE, decontamination, medical surveillance, air monitoring, training, and emergency response.

The EG&G project manager is Responsible for enforcing the PSHSP. The primary subcontractor and all lower tier subcontractors are responsible for complying with the PSHSP.

SECTION B 2

SOIL VAPOR SURVEY PROJECT PERSONNEL

The following personnel have been assigned to this project. Descriptions of the responsibilities of these positions are included in the approved Health and Safety Plan for OU2 (EG&G, 1991).

EG&G Project Manager
James P. Koffer
(303) 966-6954/Pager (303) 966-4000, # 1873

EG&G ER Health and Safety Officer
Keith Anderson
(303) 966-6979/Pager (303) 966-4000, # 3296

EG&G Health and Safety Liaison
Mike Brooks
(303) 966-5810/

EG&G Health and Safety Coordinator
Peggy Schreckengast
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EG&G Health and Safety Area Administrator
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EG&G Radiological Operations Section Manager
Debbie Davidson
(303) 966-5772/Pager (303) 966-4000, # 5514

EG&G Radiological Engineering Representative
Rick Gentry
(303) 966-8349/Pager (303) 966-4000, # 5390

EG&G Occupational Health Director
F.J. Furman
(303) 966-2895/Pager (303) 966-4000, # 2356

EG&G Fire Chief
Tim Parker
(303) 966-6043/Pager (303) 966-4000, # 3706

or

EG&G On-Duty Battalion Chief
(303) 966-4337

EG&G Industrial Safety Representative
Garth Beers
(303) 966-3149/Pager (303) 966-4000, # 3060

Subcontractor Project Manager
To be determined

Subcontractor Site Health and Safety Officer
To be determined

Subcontractor Health and Safety Specialist
To be determined

Subcontractor Mobile Laboratory Operator
To be determined

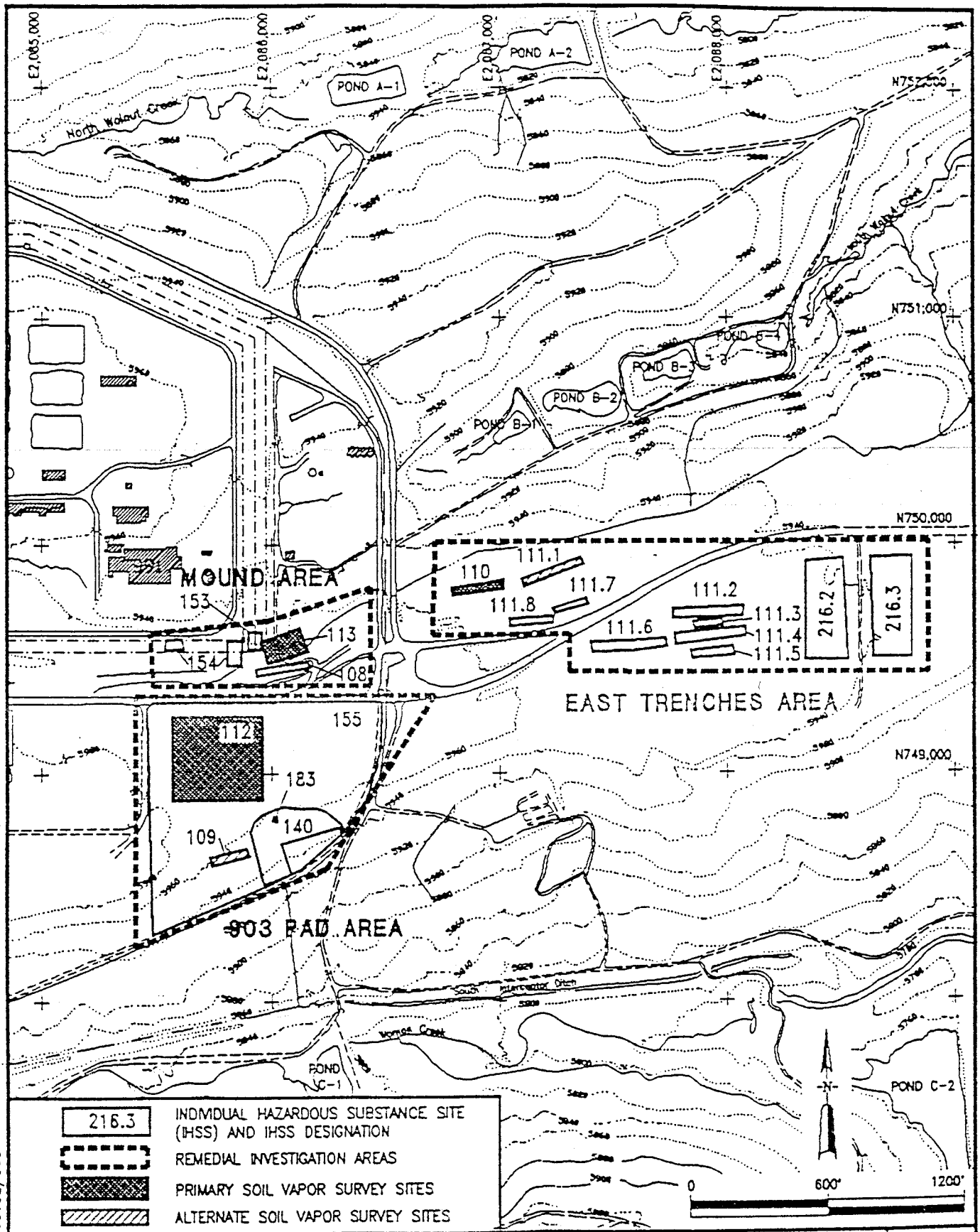
Subcontractor Field Equipment Operators
To be determined

Subcontractor Soil Vapor Samplers
To be determined

SECTION B 3
SITE DESCRIPTION

The SVS will be conducted at three Individual Hazardous Substance Sites (IHSSs) within OU2: IHSS Nos. 112, 113, and 110, and may be conducted at two alternate sites: IHSS Nos. 109 and 111.1 (Figure B 3-1). These sites are described in detail in Sections 2 and 3 of the "Soil Vapor Survey Work Plan" preceding this PSHSP.

In brief, it is expected that carbon tetrachloride, chloroform, tetrachloroethylene (PCE), and trichloroethylene (TCE) comprise the majority of the VOC contaminants at the SVS sites. Inorganic contaminants that may be present at the SVS sites include uranium, plutonium, beryllium, and americium.



U.S. DEPARTMENT OF ENERGY Rocky Flats Plant Golden, Colorado	SOIL VAPOR SURVEY SITES OPERABLE UNIT NO. 2	FIGURE B3-1

R37078.MBMB100792/600

SECTION B 4
SOIL VAPOR SURVEY METHODS

SVS methods are described in detail in Section 3 of the "Soil Vapor Survey Work Plan" preceding this PSHSP. The initial task will involve mobilization and set up of a portable laboratory. Shallow sampling to depths of 3 to 5 feet will be accomplished by driving a soil probe into the ground using a truck-mounted or portable driver. In order to penetrate asphalt (present at IHSS No. 112) it may be necessary to first punch a hole with a hydraulic hammer before driving the probe. If hole refusal is encountered, it may be necessary to drive a preliminary hole into the soil with a "slam bar," and then insert a probe into the hole. A vacuum pump will then be attached to the soil probe to pull gas into a gas sampling bulb. Samples will be collected from the gas sampling bulb with a gas tight syringe. Samples will be delivered to the mobile laboratory for analysis. It is anticipated that approximately 155 sampling points will be required to complete Phase I sampling. Phase II sampling may be done at an additional 30 points to better characterize potential contaminant source areas. It is estimated that 10 deep sampling points (up to 10 feet in depth) may be required if shallow samples contain no contaminants.

SECTION B 5

HAZARD ASSESSMENT

Potential physical, chemical, and radiological hazards that may be encountered during work within OU2 are described in detail in the EG&G Health and Safety Plan (EG&G, 1991b). This section will summarize the specific hazards expected to be encountered during the SVS. The physical, chemical, and radiological hazards that may be encountered during execution of the SVS are presented in Sections 5.1, 5.2, and 5.3, respectively.

The subcontractor SHSO will be responsible for all subcontractor employee exposure monitoring (i.e., noise, heat and cold stress, etc.). Additional information regarding radiological monitoring and screening is presented in Section 5.3.

5.1 PHYSICAL HAZARDS

TASK	HAZARD	MEASURES OR CONTROLS TO REDUCE HAZARD
Soil Vapor Sampling	Noise	Noise exposure may occur when driving the soil probe into the ground or when operating the slam bar. Noise monitoring will be conducted during the initial sampling. If noise exposures exceed 85 dBA, hearing protection will be required.
	Pinch Points	The SHSO will identify sampling related pinch points, including the injection hazard from gas-tight syringes, and will train sampling personnel in safe work practices.
	Material Handling	The SHSO will identify items such as soil probes and slam bars which may present lifting and/or material handling stress and will train samplers in proper techniques. Samplers will wear safety shoes to protect their feet.
	Slips, Trips and Falls	Pre-designated routes will be established to prevent trips and falls. Safe housekeeping and material handling techniques will be stressed. Tripping hazards presented by the terrain will be identified and communicated to samplers.

TASK	HAZARD	MEASURES OR CONTROLS TO REDUCE HAZARD
	Electrical	Samplers will be trained in electrical safety. Ground fault current interrupters will be used with all electrical generators.
Soil Vapor Sampling	Cold Stress	Samplers will be trained in the symptoms of cold stress. Warm PPE will be worn if temperatures drop below 55 degrees F, and PPE will be changed if it gets wet. Direct contact with cold surfaces and air will be avoided. Extra breaks may be needed on days below 40 degrees F to keep warm.
	Heat Stress	If outside temperatures exceed 70 degrees F, samplers will have radial pulse monitored for 30 seconds as early as possible in the resting period. If the heart rate exceeds 110 beats per minute, the next work period will be shortened by 33%. If the heart rate exceeds 110 beats per minute at the beginning of the next rest period, the following work cycle will be further reduced by 33%. Plenty of cool water or other non-caffeinated drinks shall be available. The SHSO shall observe field personnel for symptoms of heat stress. The guidance presented above for heat stress monitoring and control is based on EPA Health and Safety Guidance (EPA, 1985).
	Buried Drums	Screening with a magnetometer or equivalent shall be done to identify the presence of buried drums. Sampling shall not be attempted above such areas. Sampling shall proceed with caution and will be aborted in locations where buried drums are encountered.
Laboratory Analysis	Pinch Points	Shall be controlled as discussed above.
	Material Handling	Shall be controlled as discussed above.
	Trips and Falls	Shall be controlled as discussed above.
	Electrical	Shall be controlled as discussed above.

TASK	HAZARD	MEASURES OR CONTROLS TO REDUCE HAZARD
	Cold Stress	Shall be controlled as discussed above.
	Heat Stress	Shall be controlled as discussed above.
	Compressed/ Flammable Gases	The handling, storage, and use shall be per Occupational Safety and Health Administration (OSHA) and U.S. Department of Transportation (DOT) standards. Cylinders shall be secured, and non-sparking tools will be used.

5.2 CHEMICAL HAZARDS

The following table summarizes the major chemical contaminants present in the soil at OU2, the permissible exposure limits (PELs), the primary exposure routes, and the major symptoms of exposure.

Table B 5-1

Chemical Hazards

Chemical Name	PEL	Route of Entry	Symptoms of Exposure
Carbon tetrachloride	2 ppm	Inh., Abs., Ing., Con.	CNS depression, nausea, liver/kidney damage.
Chloroform	2 ppm	Inh., Ing., Con.	Eyes, nose, throat irritation; nausea, CNS depression, decreased alertness, headache, liver damage (cancer).
Methylene Chloride	500 ppm	Inh., Ing., Con.	Fatigue, lightheadedness, nausea, numbness in limbs, eye irritation, (Cancer)
Trichloroethylene	50 ppm	Inh., Ing., Con.	Headache, dizziness, visual disturbance, nausea.
Tetrachloroethylene	25 ppm	Inh., Ing., Con.	Eyes, nose, throat irritation; nausea, CNS depression, decreased alertness, headache, liver damage (cancer).
Beryllium	0.002 mg/m^3	Inh.	Respiratory irritation, weakness, fatigue, weight loss, cancer.

Key: Abs - Skin Adsorption
Inh - Inhalation
Ing - Ingestion
Con - Skin and/or eye contact
CNS - Central Nervous System
PEL - OSHA permissible exposure limit

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Air monitoring during soil vapor sampling for VOCs will be performed by the HSS with a photoionization detector (PID) or a detector tube system. Beryllium is the most toxic metal present within OU2. The highest level of beryllium found within OU2 is 15 micrograms per kilogram (μg/kg) of sediment (EG&G, 1991b). Therefore, if all the particulate in the air were from this highest source, there would still need to be 133,000 milligrams per cubic meter (mg/m^3) of dust in the air to reach the beryllium PEL of 0.002 mg/m^3. A particulate concentration of 133,000 mg/m^3 is a dense dust cloud. It is, therefore, highly unlikely that the risk exposure limits to beryllium will be exceeded during conduct of the SVS project. Although overexposure to airborne contamination is unlikely, the sampling technicians shall stay on the upwind side of the soil probe to further reduce exposure potential. To identify the wind direction a wind sock, piece of banner tape, or other suitable lightweight material, will be placed on a pole at a height of approximately 5.5 feet above the ground. The wind direction can then be determined by observing the device.

Monitoring of the ambient environment for volatile organic compounds (VOCs) has been conducted during recent drilling operations at OU 2. The results listed below (Table B5-2) are the maximum ambient levels detected during drilling in 1991 in the areas where the SVS will be performed:

Table B5-2
Total Volatile Organic Concentrations
From Recent Drilling Activities
At Operable Unit 2

Well No.	IHSS No.	Total VOC Concentration (ppm)
20191	111.1	1 ppm
08591	111.5	1-3 ppm
07391	109	3-5 ppm
09991	113	3 ppm
10191	110	8-10 ppm
10291	111.1	15 ppm

5.3 BIOLOGICAL HAZARDS

Snakes, arachnids, and insects are the major biological hazards that may be encountered at the RFP. Care should be taken when performing field work at the facility. Wearing hightop work boots will provide some measure of protection. Leather work gloves are also recommended when handling items on or near the ground. In the unlikely event of a snake bite or other bite, the following procedures should be followed.

- Call an emergency medical service or get the victim to a medical facility as soon as possible.
- Keep victim calm and still. Snakebite reactions are aggravated by anxiety and fear.
- Keep bitten area below level of heart, if possible, and keep it immobile.
- Treat for shock, if necessary.
- Give mouth-to-mouth resuscitation if breathing stops.
- Begin cardiopulmonary resuscitation (CPR) if breathing and heartbeat stop.
- Do not give victim aspirin.
- Do not use ice on the bite.

Mortality rates of rattlesnake bite victims are low, but crippling injuries can result. Medical care should be sought even if the victim shows no adverse reactions.

The following biological hazards could be encountered in the field and precautions should be taken to protect field personnel:

Prairie Rattlesnake: The prairie rattlesnake generally has brown blotches giving way to crossbands on its tail. The blotches are usually well defined and the entire body has a greenish cast. Another characteristic of rattlesnakes is interlocking joints at the end of the tail that make a sharp rattling noise when shaken. Field personnel need to be aware that snakes could be in the area and should exercise caution when working in undisturbed areas and locations with animal dens. Extra care should be taken around rocks,

particularly those with overhangs. Rattlesnakes are generally timid and will not attack unless disturbed.

Black Widow Spiders: The black widow spider has a black shiny body about the size of a pea. The abdomen is the shape of a sphere and there is a red or yellow hourglass-shaped mark on the underside of abdomen. There are usually found in shady areas or under rocks and wood. It weaves shapeless webs in undisturbed areas. A bite could result in severe pain, illness, and possible death from complications, but not usually from the bite itself.

Scorpions: There are several types of scorpions native to Colorado. Scorpions can be green or brown to yellowish in color and range from 1/2 inch to 8 inches in length. Their bodies are divided into two parts - a short, thick, upper body and along abdomen with a six-segmented tail with venomous sting at the end. A scorpion has six pairs of jointed appendages -- one pair of small pincers, one pair of large claws, and four pairs of jointed legs. They are most active at night. A scorpion sting is very painful , but usually will not result in death.

Wood Ticks: Although wood ticks are arachnids, they lack the indication of segments. Ticks are external blood feeding parasites. Bites from tick could result in the transmission of Rocky Mountain Spotted Fever, a serious and possibly fatal disease. The *Rickettsia* virus infects wood ticks, mostly in the late spring and early summer. It is characterized by chills, fever, severe pain in leg muscles and joints, and a body rash. Personal protective equipment can offer some protection, but the use of insect repellent on outside clothing could also be warranted. Field personnel should search their bodies at the end of each day to check for ticks and chiggers.

Violin Spider: Also known as the "Brown Recluse Spider". These spiders are 1/4 to 3/8 inches in length. The bases of its legs are orange -yellow with the rest of the legs grayish to dark brown. The abdomen is grayish to dark brown with no obvious pattern. Each foot has two claws. Its habitat is in cornered areas. These spiders sometimes take refuge in towels or articles of clothing. Their venom is particularly poisonous to people

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and the wound commonly develops a crust which falls off leaving a deep crater which does not heal for months.

Other biological hazards include chiggers, wasps, bees, and poison ivy. Bees and wasps are especially dangerous to people who have allergic reactions to their venom. Workers who are sensitive to insect stings are responsible for notifying the Site Health And Safety Officer, the Health And Safety Specialist, the filed team leader, and the project manager prior to the commencement of field work.

5.4 RADIOLOGICAL HAZARDS

Five radionuclide contaminants may be present in particulate form during soil vapor sampling. These five are uranium-238, uranium-233, uranium-234, plutonium-239, and americium-241. The primary type of radiation of concern relative to particulate exposure is "alpha" radiation. Alpha radiation presents an internal hazard when radionuclides in particulate form are inhaled or ingested. The relatively large amount of ionization occurring in a small volume from alpha particulates inside the body is typically 20 times more damaging than ionization caused by X-ray or gamma radiation. Radiation exposure is reduced when the concentration of the radionuclides in the soil is low or the potential for the material to become airborne is low (EG&G, 1991b).

The risk of radiation uptake from inhalation during conduct of the SVS is expected to be low because it is distributed throughout large volumes of soil (EG&G, 1991b). The risk of uptake through ingestion is also low and can be further minimized by following good hygienic practices such as wearing gloves, washing hands after working around contaminated soil, and not smoking, drinking, or eating in or around the contaminated areas. The highest potential for contamination occurs within 1 foot of the contaminated soil.

Since the exposure to radiation can cause serious health effects, it is important to assess the amount of these materials present and the potential for exposure during work operations. Plutonium-239 is the most hazardous radionuclide present in the SVS soils. If adequate protection is taken for plutonium, protection will also be adequate for the other alpha emitting radionuclides (EG&G, 1991b).

The derived air concentration (DAC) is the concentration of a single radionuclide in air, which if inhaled over a 1-year period would irradiate a person to the occupational exposure limit of 5 Rem per year. In general, 1/10 of the DAC is the action level for upgrade to a full-face respirator.

Table B 5-3 shows the information that will be used to ensure that airborne concentrations are maintained below the DAC during field operations. This procedure was developed by RFP Environmental Restoration personnel and will be implemented in the areas of suspected contamination of soils (EG&G, 1991b).

5.4.1 Radiological Monitoring and Screening

Radiological monitoring and screening will be conducted by the Health and Safety Specialist (HSS) (subcontractor). All monitoring activities are conducted in accordance with the approved Environmental Management Radiological Guidelines (EMRGs) (EG&G, 1991a). All personnel, material, and equipment will be monitored prior to leaving known or suspected areas of radiological contamination.

Radiological monitoring will be conducted during intrusive activities. Monitoring will be conducted for alpha and beta/gamma contamination according to appropriate sections of the EMRGs. Surface contamination surveys are conducted in accordance with EMRG 3.1 "Performance of Surface Contamination Surveys." Personnel, material, samples, drill cuttings, and equipment must all be surveyed to meet the requirements of EMRG 3.2 "Survey Requirements for Conditional and Unrestricted Use."

The HSS is considered to be a skilled multi-task health and safety technician and will conduct the following activities:

- Day-to-day monitoring.
- Immediate implementation of the action specified in Table B 6-1 in the event that the corresponding action level is exceeded.

Table B 5-3

Local Air Monitoring Trigger Levels for ^{239}Plutonium in Soils

Soil Activity pCi/gram	1.8 Rem/yr. TSP mg/m^3	DAC/10 TSP mg/m^3
0.001	1,060,500	200,000
0.01	106,050	20,000
0.1	10,605	2,000
1	1,061	200
5	212	40
10	106	20
20	53	10
40	27	5
60	18	3
80	13	3
100	11	2
200	5	1
400	3	0.5
600	2	0.3
800	1.3	0.3
1,000	1.1	0.2
1,500	0.7	0.13
2,000	0.5	0.10
5,000	0.2	0.04
10,000	0.1	0.02
20,000	0.05	0.01
50,000	0.02	0.004
80,000	0.013	0.003
100,000	0.011	0.002

Trigger levels are for total suspended particulate matter (TSP) concentrations measured in the breathing zone as 8-hour, time-weighted averages. They are based on (1) the derived air concentration (DAC)/10 which DOE recognizes as the criteria for implementing respiratory protection and (2) the RFP as low as reasonably achievable (ALARA) based recommended annual committed effective dose equivalent of 1.8 Rem/year.

Use of the Table B 5-3

1) Identify the approximate soil activity in the area where intrusive activities are to be conducted.
2) Identify the corresponding DAC/10 and annual committed effective dose equivalent (i.e., 1.8 Rem/yr) trigger levels. Those values represent TSP concentrations that trigger the following actions:
   A) Donning respiratory protection equipment: DAC/10 threshold.
   B) Stop intrusive actions and reevaluate the activities, conditions, and precautionary requirements: 1.8 Rem/yr TSP threshold.
3) Measure TSP breathing zone concentrations during intrusive activities using a Piezometric Balance, Mini-RAM, or comparable real-time instrument.
4) If measured TSP concentrations attain the trigger levels identified above for a sustained period of time (15-30 minutes), such that the 8-hour time-weighted average could be approached, follow the appropriate requirements identified above (A or B) and notify the HSS.
5) RFP practice dictates that reasonable measures be taken to keep exposures to radionuclides ALARA. Routine dust avoidance procedures such as avoiding the dust plume path should be implemented, to the extent practicable, regardless of the TSP measurements.
6) Environmental concentration measurements and estimates can vary at a given location. Thus, users of this table are encouraged to exercise conservative judgment regarding the selection of trigger levels.

Source: EG&G, Industrial Hygiene.

- Immediate notification of the EG&G Health and Safety Liaison (HSL) and Radiological Engineering (RE) if any action levels are exceeded.

In the event that a radiological action level is exceeded, a decision will be made by RE and the SHSO for appropriate actions.

A Radiation Work Permit (RWP) will be issued for all activities conducted in known or suspected areas of radiological contamination. Specific implementation policies for the RWP are detailed in the EG&G Health and Safety Practices Manual, Section 6.7 "Radiation Work Permit" dated 28 February 1991.

SECTION B 6
MONITORING

The following table indicates the air and personal monitoring instruments, frequency of monitoring, action limits, and action required for all work conducted as a part of the SVS.

Table B 6-1
Monitoring Information

Instrument	Frequency	Action Limit	Action
Photoionization Detector (PID, HNu 11.7 eV lamp or equivalent) or Detector Tubes for Carbon Tetrachloride and Chloroform	(H + D)	0-1 ppm	Level D, no respiratory protection required to be worn.
		1-10 ppm	Use detector tubes to check for presence of carbon tetrachloride and chloroform ; if carbon tetrachloride and/or chloroform are >1 ppm then withdraw from site. If not, Level C respiratory protection required. Respirator equipped with combination cartridge approved for organic vapors (OV) and high efficiency particulate air filter (HEPA).
		>10 ppm	Withdraw from site.
TLD Badge	(C)		Normal TLD badge use.
Ludlum Model 12-1A Count Rate Meter	(H + D)	>500 dpm/100 cm2	don level C PPE and notify HSL.
Mini-RAM	(H + D)	>2.5 mg/m^3	Stop work. Call Health and Safety Specialist (HSS). Trigger level based on annual committed effective dose equivalent of 1.8 Rem/yr assuming worst-case soil level of 500 pCi/g plutonium.
		>0.4 mg/m^3	Level C respiratory protection required.
		<0.4 mg/m^3	Respirators not required.
Pulse Check (heat stress)	(H)	50-110 bpm	Continue work. If approaching 110 bpm, reduce work load to minimize heat stress.
		>110 bpm	No field work permitted. Rest in cool location. Drink cool fluids.

(H + D) is hourly plus more frequent monitoring during activities which disturb the soil.
(C) is continuous monitoring.
(H) is hourly monitoring.

SECTION B 7

EXPOSURE SYMPTOMS AND ACTIONS REQUIRED

Specific exposure conditions/agents, warning symptoms, and the actions required if these warning symptoms develop are specified in Table B 7-1. The required actions for radiation or chemical exposures are given in Sections B 5 and B 6.

Table B 7-1

Exposure Symptoms and Actions Required

Condition/ Agent	Warning Symptoms	Action Required
Pre-heat stress	Headache Pulse over 110 bpm	Check pulse. Rest and drink cool fluids until heart rate is below 110. Increase frequency of breaks, and increase cool water intake.
Heat cramps	Cramps Exhaustion Dizziness	Move to cool place. Give cool fluids to drink. Massage cramping area. Withdraw from field work for minimum of 1 day.
Heat exhaustion	Rapid breathing Weak pulse Dilated pupils Cold, clammy skin Heavy perspiration	Move to cool place. Make patient rest. Remove PPE. Give cool fluids to drink. Withdraw from field work for a minimum of 2 days.
Heat stroke	Pulse over 110 bpm Hot, dry skin Constricted pupils Disorientation	Remove PPE. Cool rapidly using cool–**NOT COLD**–water. Treat for shock. **TRANSPORT TO HOSPITAL. LIFE THREATENING:** Doctor must provide written permission for return to work.
Frostbite	Gray, blanched skin Numbness	If medical attention is not available, the affected area should be carefully warmed. If warming is done, it should be done by immersing the affected area in water that is approximately body temp. (100-105°F). Do not allow the affected body parts to touch the sides or bottom of the container (bath tub). Do not place pressure on the affected area. The presence of pain is an indicator of successful rewarming. Wrap rewarmed area in gauze and transport to hospital for treatment.
Hypothermia	Shivering Body temperature below 95.6°F	**SEEK MEDICAL ATTENTION IMMEDIATELY.** If medical attention is not readily available, remove wet clothing, dry the person, keep victim at rest, slowly warm core without warming legs, give warm (not hot) liquids if person is conscious, transport to hospital as soon as possible.
Radiation	No exposure symptoms expected	Trace quantities of americium, plutonium, tritium, and uranium may be present as soil and groundwater contaminants. Based on maximum soil contaminant concentrations found in nearby areas, resuspended dust is not expected to exceed regulatory limits for airborne radiation. See Sections B 5 and B 6 for action limits.
Chemicals	Exposures above the PEL may produce headache, nausea, dizziness, and irritation of eyes, nose and lungs.	All personnel should withdraw from site. Contact the EG&G Health and Safety Liaison and reevaluate potential exposures.

SECTION B 8

PERSONAL PROTECTIVE EQUIPMENT

Work on this project will begin in level C protection. Downgrading to level D protection can proceed if action levels identified in Section B 6 are not exceeded. Table B 8.1 specifies PPE required.

Table B 8-1

Personal Protective Equipment

Item	Comment
Respiratory Protection	Full-face air purifying respirators (manufacturers: MSA or AO) when action levels or conditions dictate the use. Initial sampling will be done using respirators in Level C PPE. PPE can be downgraded to Level D (no respirator) if action levels are not exceeded.
Respirator Cartridges	Use organic vapor and high efficiency particulate air filter cartridges (OV/HEPA) when respirator is required. Cartridges to use: AO = R53HE and MSA = GMA-H.
Boots - Safety (leather) steel toe, steel shank	OSHA requirement.
Gloves (leather)	To prevent potential for direct contact with radiological wastes.
Inner Gloves (Nitrile)	To provide added protection.
Coveralls (Saranex or poly-coated Tyvek)	Potential for radiological contact during SVS is considered to be low. To protect against potential contact, chemical resistant disposable clothing will be worn.
Eye Wash	A 15-minute eye wash station shall be provided, and it will be located in the mobile laboratory.
First Aid Kit	Contains antiseptic spray, sterile eye wash, 1" x 5-yd roller bandage, 1½" x 2" gauze pads, 1½" x 5-yd spool of tape, aspirin, clean wipes, ice pack, ammonia inhalants. tweezers kit, triangular bandage, plastic bandage, compress, finger bandages, knuckle bandages, and first-aid book.

SECTION B 9
WORK ZONES

Each SVS site will be divided into four basic zones: 1) Exclusion Zone, 2) Contamination Reduction Zone, 3) Support Zone, and 4) the Radiologically Controlled Area (RCA). The Exclusion Zone (EZ) includes areas of high physical, chemical, or radiological hazards. Only authorized personnel are permitted within the exclusion zone. Examples of exclusion zones include a 4-foot radius around a rotating auger, and areas where respiratory protection is required. The exclusion zone will be clearly marked with traffic cones, survey flags, banner tape, or other high visibility markings.

The Contamination Reduction Zone (CRZ) is the area immediately surrounding the EZ. The Contamination Reduction Corridor (CRC) is located within the CRZ and is the decontamination area through which all authorized personnel must enter and exit from the EZ. The CRC contains decontamination equipment and containers for disposable outerwear, etc. The CRC is located on the upwind side of the EZ. Entrances and exits are clearly marked with high visibility items such as traffic cones. A step-off pad will be established within the CRC immediately adjacent to the boundary between the CRZ and the Support Zone (SZ). It is at this pad that each worker will be thoroughly screened for radiological contamination prior to "stepping off" into the SZ.

The SZ contains an area for personnel who perform support functions for the physical work and a break area. It is upwind of the CRZ. Managers, spare equipment, etc., are generally located in the SZ. All personnel exiting the EZ must be decontaminated prior to entering the SZ. Heat stress monitoring is performed in the SZ.

The Radiologically Controlled Area (RCA) is an area determined by EG&G to be potentially contaminated by radiation. Unless the boundaries of the RCA are already posted, the RCA is the same as the EZ.

Contamination prevention techniques will be used wherever feasible. Monitoring equipment will be wrapped in plastic to prevent possible contamination and to minimize decontamination, to the

extent possible, without interfering with their function. The plastic will be discarded as contaminated waste after each day's use.

Engineering controls will be used first, wherever feasible, followed by a combination of administrative and PPE controls. The possibility of significant dust generation during SVS is low.

Sampling technicians will be wearing full-face respirators at the beginning of work until monitoring confirms that they are no longer needed. PPE will be used when the other controls are not feasible or will not adequately control potential exposures.

All equipment to be used by personnel will be checked to ensure proper function and to make sure that all calibration/safety checks have been performed to the manufacturer's specifications prior to use in the field. Testing of the breathing zone atmosphere is required for OSHA documentation. If special hazards are identified, appropriate equipment must be selected to assess the hazard level. The instruments selected must detect all suspected hazards, substances, agents, or materials of concern (radiation, VOCs, and dust/particulate hazards).

Equipment and instrument calibration, safety and function checks, and the daily safety briefings will be documented in the field logbook. Incidents, exposures, accidents, and other health and safety problems or conversations relating to field activities will also be documented.

Only authorized personnel are permitted to enter the EZ and the RCA. Authorized personnel are those preapproved personnel, named in this PSHSP, who are needed in the EZ or the RCA to perform essential site functions.

SECTION B 10
DECONTAMINATION

10.1 PERSONNEL

Discard disposable outerwear.[1] Wash exposed skin with soap and water. Rinse with water.

10.2 FIELD MONITORING EQUIPMENT

Remove and dispose of plastic wrapping. All potentially exposed surfaces will be wiped with a cloth dampened with soap and water after each use and housed in a trailer on the RFP site. Effectiveness of decontamination will be checked by frisking or wipe testing each instrument. Contaminated equipment is not permitted to be stored in general use areas or to leave the site. Decontamination wash and rinse water will be disposed of in the RFP approved disposal area or as stated in the contract.

10.3 RENTAL EQUIPMENT

Rental equipment will be washed and wipe tested for removable surface contamination. Equipment will not be removed from the site until RFP determines that it is safe for use by the general public (obtain written RFP approval). A copy of the RFP approval will be maintained in the project file.

All equipment, regardless of ownership, shall be monitored in accordance to RFP Safety Standards per the Rocky Flats Health and Safety Practices Manual Section 18.10 and Department Of Energy Orders 5480:11 before leaving plant site.

[1] Solid wastes will be placed in a plastic bag, labeled and transferred to RFP for proper disposal. Liquid wastes will be containerized and transferred to RFP for proper disposal.

10.4 VEHICLES

Vehicles used in potentially radioactive areas will be surveyed for radioactive contamination prior to leaving the RFP facility. Vehicles must meet facility decontamination standards before exiting the site (obtain written RFP approval).

10.5 PROPERTY RELEASE EVALUATION PROGRAM

The following release limits, as established under Section 18.10 of the EG&G Health and Safety Practices Manual (dated 10 November 1992), must be met prior to release of any item from RFP:

Alpha 20 dpm/100 cm^2 removable	500 dpm/100 cm^2 total
Beta/Gamma 1,000 dpm/100 cm^2 removable	5,000 dpm/100 cm^2 total

SECTION B 11
TRAINING REQUIREMENTS

All field personnel will have completed and be current in the training specified in 29 CFR 1910.120, and shall have the appropriate training as identified in Table B 11-1. This training includes, but is not limited to:

40-hour Hazardous Waste Site Worker Training
8-hour Annual Refresher Training
8-hour Supervisory Training (supervisors)
24-hour On-the-Job Training
8-hour Environmental Restoration Radiation Worker Training

Table B 11-1

Personnel Training Requirements

	Medical Clearance	OSHA 40-hour Training	OSHA Supervisory Training	First Aid	CPR
PROJECT MANAGER To be determined	X	X	X	X	X
TASK MANAGERS To be determined	X	X	X	X	X
FIELD STAFF To be determined	X	X		X	X
TECHNICIANS To be determined	X	X		X	X
SHSO To be determined	X	X		X	X

SECTION B 12

MEDICAL MONITORING REQUIREMENTS

All field personnel will be participants in a medical monitoring program which fulfills the requirements of 29 CFR 1910.120 and 29 CFR 1910.134 (respiratory protection). The program includes:

Baseline Medical Examination
Annual Medical Examination
Exit Medical Examination
Incident Specific Examination

Radiological baseline bioassay samples shall be collected as deemed appropriate by EG&G Radiological Engineering or Radiological Dosimetry personnel.

SECTION B 13
CONTINGENCY PLANS

The concentrations of chemical and radiological contaminants are suspected to be low. Site emergencies are therefore expected to be limited to the slip, trip, fall, cut, and abrasion variety. The highest potential for injuries is expected to occur during SVS operations (material handling).

If emergencies arise, the injuries will be stabilized using standard first aid practices. All injuries will be documented in the field logbook and reported to the contractor's project manager and/or SHSO. Minor injuries and cuts will be treated by the field workers using basic first aid procedures and materials. Additional medical attention will be sought if the worker's injury requires more than basic first aid measures or if the condition worsens.

Injuries which require more than simple first aid measures will be treated by medical personnel (at the RFP or through the prearranged medical hospital or clinic as stated below). Examples of such injuries are described below.

- Exposures or suspected exposures to chemical or radiological hazards will be taken seriously. If treatment is required, the individual will be taken to a hospital without delay. Effective diagnosis and treatment sometimes require the individual to be tested within hours of the suspected exposure. After rendering first aid and transport to the medical facility, the exposure will be reported to the contractor's project manager or SHSO as soon as possible.

- If a chemical gets in the eyes, flush eyes with water for 15 minutes. Remember to occasionally lift the upper and lower lids during flushing. Phone emergency response personnel.

- If a chemical gets on the skin, flush the affected skin with water for 10-15 minutes. Phone emergency response personnel.

- If a chemical is ingested, call emergency medical personnel.

- If a chemical is inhaled, move the victim to fresh air at once. Phone emergency response personnel.

Ambulance:	Building 331 - Phone: 2911 RFPFD
Hospital:	Phone: 2911 or Hospital TBD
Police:	Phone: 2911
Fire:	Phone: 2911

EMERGENCY CONTACT PHONE NUMBERS

EG&G Project Manager
James Koffer
(303) 966-6953/Pager (303) 966-4000, # 1873

EG&G Health and Safety Officer
Keith Anderson
(303) 966-6979/Pager (303) 966-4000, # 3296

Subcontractor Project Manager
To be determined

Subcontractor Site Health and Safety Officer
To be determined

SECTION B 14

UNDERSTANDING AND COMPLIANCE STATEMENT

The undersigned persons understand the provisions of this safety plan and agree to abide by its provisions:

Name Lettered	Signature	Date

SECTION B 15

REFERENCES

EG&G. 1991a. Environmental Management Radiological Guidelines (EMRGs), Publication No. 3-21000-OPS-EMRG.

EG&G. 1991b. Final Health and Safety Plan for Phase II RCRA Facility Investigation/ Remedial Investigation at the 903 Pad, Mound, and East Trenches Areas.

EG&G. 1993. Soil Vapor Survey Work Plan, Subsurface Interim Measures/Interim Remedial Action, Operable Unit No. 2, 12 January 1993.

EPA. 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHSS (NIOSH) Publication No. 85-115, October 1985.

APPENDIX B-1

ROUTES TO HOSPITAL

To be determined

APPENDIX B

PROJECT-SPECIFIC HEALTH AND SAFETY PLAN FOR SOIL VAPOR SURVEY WORK PLAN

SUBSURFACE INTERIM MEASURES/ INTERIM REMEDIAL ACTION 903 PAD, MOUND, AND EAST TRENCHES AREAS

OPERABLE UNIT NO. 2

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

Revision 2

21 May 1993

c:\projects\OU2\HASP_R2.593

Section B2: Add the following to the list of Project Personnel:

Advanced Sciences, Inc. Project Manager
Mike Waltermire
(303) 980-0036

Advanced Sciences, Inc. Regional Health & Safety Coordinator
Ron Hill
(303) 980-0036

Advanced Sciences, Inc. Site Health & Safety Officer
Ron Thomas
(303) 980-0036 or 966-6544

Advanced Sciences, Inc. Health & Safety Specialist
Don Nelson
(303) 980-0036 or 966-6544

Advanced Sciences, Inc. Health & Safety Specialist (Alternate)
Grant Evenson
(303) 980-0036 or 966-6544

Advanced Sciences, Inc. Field Operations Lead
Doug Dennison
(303) 980-0036 or 966-6544

Advanced Sciences, Inc. Field Engineers
Cindy Kyle-Fischer
Mark Thornbrough
(303) 980-0036 or 966-6544

5.4.1 Radiological Monitoring and Screening

Change the first sentence, first paragraph, to the following: Radiological monitoring and screening will be conducted by the ASI SHSO, or the SHSO's designated HSS.

Page 5-10. Add the following as the last paragraph:
Work under this SVS Work Plan and Health and Safety Plan will be conducted in IHSS # 110, # 112, and # 113 in OU2. IHSS 112 is the 903 Pad. Per discussions with EG&G Radiological Engineering, and the OU2 drilling subcontractor, there is radiological contamination of 5000pCi/g in the soil underneath the asphalt pad, and 500-750 pCi/g in surface soil at the southeast corner of the 903 pad. A RWP will be issued for work in this IHSS, which will require Level C PPE. Pending radiological monitoring results (see Table 6-1), this requirement may be downgraded to meet actual field conditions.

Section B 5, page 5-2:

Under the section for Buried Drums, add the following sentence: EG&G is responsible for locating the soil vapor sample sites and for clearing those sites with respect to subsurface hazards.

Under Laboratory Analysis: Walsh & Associates will perform analytical services using a portable gas chromatograph. In performance of this work, Walsh & Associates will comply with all federal, state, local, and facility regulations and directives that apply to this work.

Section B 6: Monitoring

Add the following sentence to the first paragraph: Workers entering the exclusion zone are required to wear a personal radiation dosimeter supplied by EG&G. EG&G will prepare an annual written report of the dosimetry results.

In Table B 6-1, delete the information for "Ludlum Model 12-1A Count Rate Meter", and for the "Mini-Ram". Modify Table B 6-1 as follows:

Photoionization Detector (PID, HNU, 11.7eV lamp or equivalent), and Detector Tubes for Carbon Tetrachloride and Chloroform	(H+D)	0-1 ppm	Level D, no respiratory protection required to be worn
		at 1 ppm	Use detector tubes to check for presence of carbon tetrachloride and chloroform. If either carbon tetrachloride or chloroform are >1 ppm, withdraw from the site. Contact SHSO and ASI and EG&G Project Managers.
		>10 ppm	Level C respiratory protection required. Use respirator equipped with combination HEPA and organic vapor cartridges.
		>25 ppm	Withdraw from site. Contact SHSO and ASI and EG&G Project Managers.
Passive Organic Vapor Monitors	As determined by SHSO.	8-hour TWA (See Table 5-1)	POVM used to document personnel exposures in the breathing zone over extended periods of time. These will be used in IHSS 110 and 113 in which previous drilling activities encountered significant underground solvent plumes.

Ludlum Model 12-1A Count Rate Meter with Air Proportional Probe	(H+D)	>2500 cpm	Stop Work. Withdraw from site. Call SHSO and Radiological Engineering.
		1250-2500 cpm	Level C respiratory protection required.
		0-1250 cpm Note: 250 cpm = 500 dpm/100 cm^2 per EMRG 3.2.	No respirator required.
Ludlum Model 31 Count Rate Meter with 44-9 Pancake Probe	(H+D)	>50,000 cpm	Stop Work. Withdraw from site. Call SHSO and Radiological Engineering.
		5000-50,000 cpm	Level C respiratory protection required.
		0-5000 cpm Note: 200 cpm = 5000 dpm/100cm^2 per EMRG 3.2.	No respirator required.
Mini-Ram (IHSS 110,112,113) & Lapel Air Sampling (IHSS 112)	(H+D)	>DAC (i.e. DAC/10 x 10 in Table 5-3),	Stop Work. Withdraw from site. Call SHSO and Radiological Engineering.
		= or >DAC/10 See Table B 5-3. Or if TSP > 5 mg/m^3	Level C respiratory protection required.
		<DAC/10 See Table B 5-3.	Respirators not required.

Section B 8 Personal Protective Equipment

Revise the first paragraph as follows: Work on this project will begin in Level C protection for work in IHSS 112 (the 903 Pad), and be conducted under a RWP.

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Downgrading to Level D protection can occur if actual field monitoring results indicate that Level C is not warranted. Work in IHSS 110 and 113 can commence in modified Level D since previous site work has not normally encountered radiological or chemical contamination above action levels. (For this plan, modified Level D is to include cloth coveralls, safety glasses, safety shoes, and nitrile gloves. The SHSO can require additional PPE as necessary to include chemical resistant disposable clothing, etc. as field conditions warrant.) However, if field monitoring triggers action limits per Table 6-1, Level C may be required.

Section 10.2: Field Monitoring Equipment

Add footnote "1" at end of first sentence.

Section 10.3: Rental Equipment

Add footnote "1" at end of first sentence.

Section B 11: Training (Add the following paragraphs)

ASI personnel that use respirators receive initial and annual refresher training on the use of respirators. Respirator fit tests are conducted annually.

Safety meetings will be conducted each shift before field work begins. Workers are required to attend these meetings, and to sign a roster (attendance sheet) that will be maintained by the SHSO at the ASI project trailers.

Section B 13: Contingency Plans

Delete the first bulleted paragraph beginning with "Exposures or suspected exposures..." Replace it with the following:

Exposures or suspected exposures to chemical or radiological hazards will be taken seriously. Any wound acquired in an RCA, requires that the injured worker be taken to the RFP Medical Clinic for evaluation (wound scan). For serious injuries, x2911, the RFP emergency number, should be called immediately to request assistance, i.e. Emergency Medical Technicians and ambulance transport (if needed). After rendering first aid and arranging transport for the injured worker, report the injury to the ASI Project Manager or SHSO as soon as possible. Also report exposures to the ASI Project Manager or SHSO as soon as possible.

Add the following for Hospital:
Hospital: Phone 2911 or St. Anthonys North (2551 West 84th Avenue, Westminster, 303/426-2151,

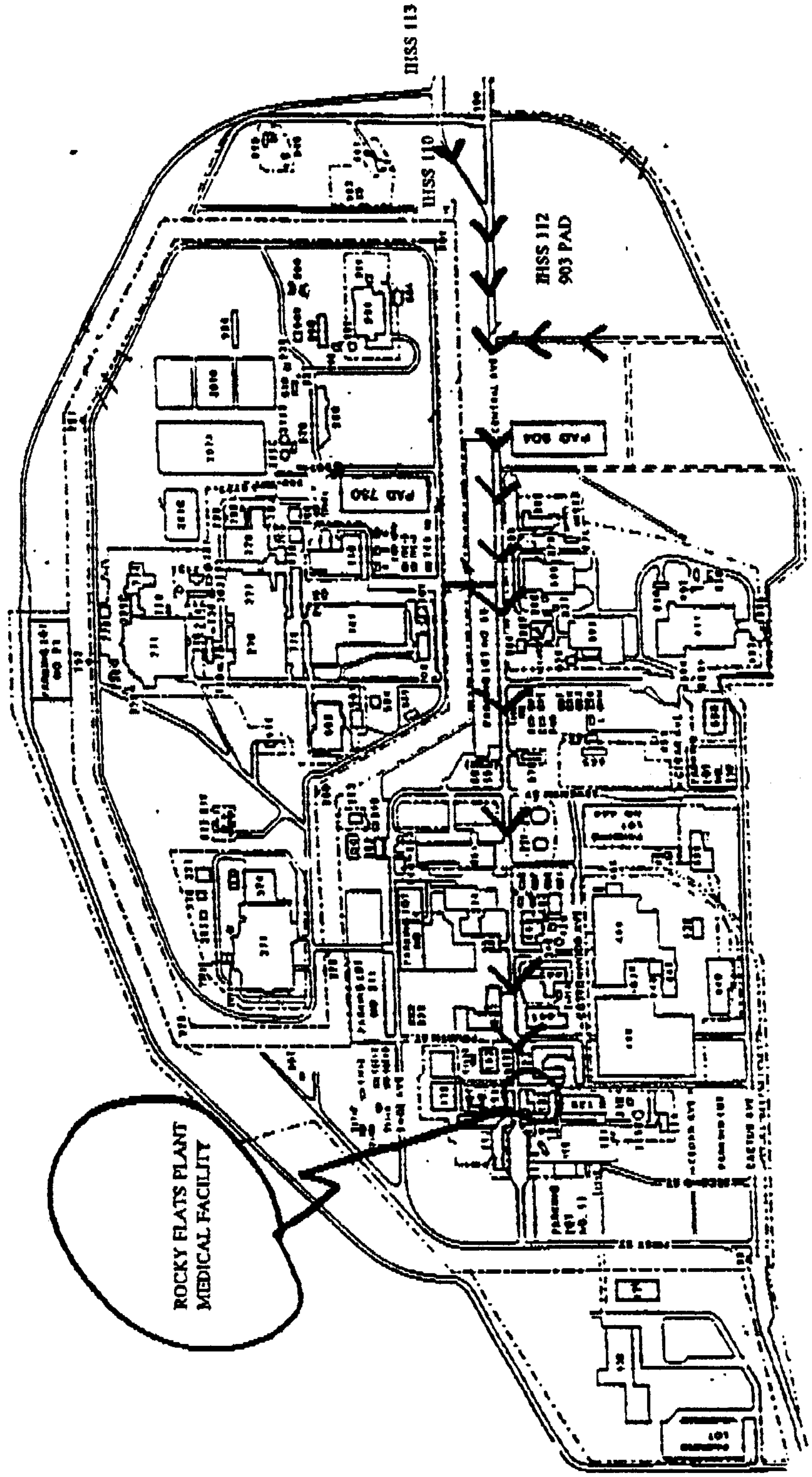
Add the following Emergency Contacts:
Advanced Sciences, Inc. Project Manager
Mike Waltermire
(303) 980-0036

Advanced Sciences, Inc. Regional Health & Safety Coordinator
Ron Hill
(303) 980-0036

Advanced Sciences, Inc. Site Health & Safety Officer
Ron Thomas
(303) 980-0036 or 966-6544

Appendix B-1. Routes to Hospital

Add Figures B-1A and B-1B showing routes to the RFP Medical Clinic, and to St. Anthonys Hospital North.



Location of Rocky Flats Plant Medical Facility at Building 122

Figure B-1A

44

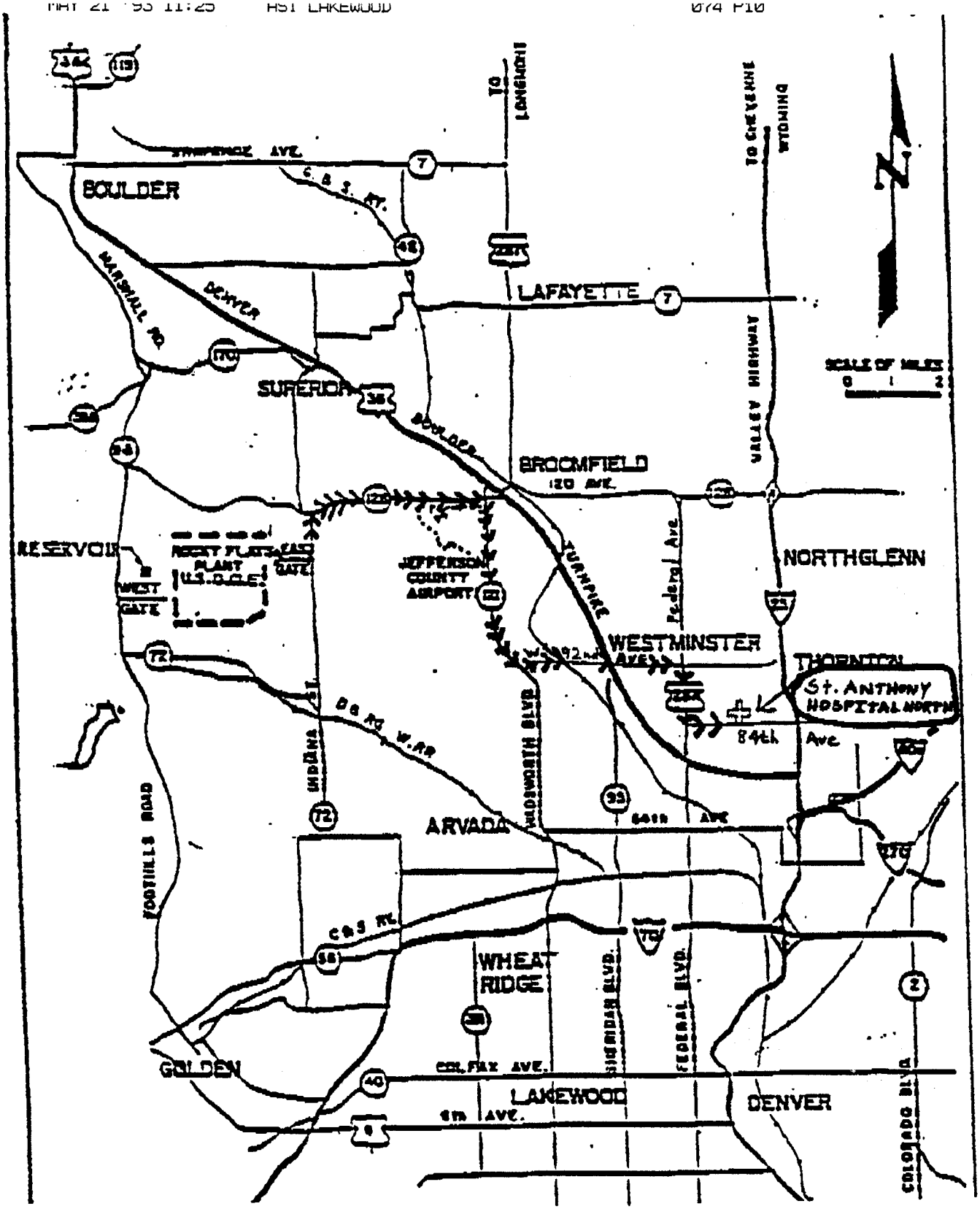

BOULDER
LAFAYETTE
SUPERIOR
BROOMFIELD
120 AVE.
NORTHGLENN
WESTMINSTER
THORNTON
84th Ave
ARVADA
WHEAT RIDGE
GOLDEN
LAKEWOOD
DENVER
6th AVE.
COLFAX AVE.
RESERVOIR
ROCKY FLATS PLANT (U.S.D.O.E.)
EAST GATE
WEST GATE
JEFFERSON COUNTY AIRPORT
St. ANTHONY HOSPITAL NORTH
TURNPIKE
Federal Ave
VALLEY HIGHWAY
TO LONGMONT
TO CHEYENNE WYOMING
MARSHALL RD
DENVER
BOULDER
HIGHWAY 93
FOOTHILLS ROAD
INDIANA
WADSWORTH BLVD
SHERIDAN BLVD.
FEDERAL BLVD.
COLORADO BLVD.
C & S RY.
SCALE OF MILES

Figure B-1B

SECTION B 14

UNDERSTANDING AND COMPLIANCE STATEMENT

The undersigned persons understand the provisions of this safety plan and agree to abide by its provisions:

Name Lettered	Signature	Date
DAVID F. REID		5/27/93
Robert C. GERMAN		5/27/93
Stanley C. Spence		5/27/93
RYAN S. WATSON		5/27/93
JOHN OSTERGREN		5-27-93
Don Nelson		5-27-93
Ronald H Hill, CIH	RONALD H HILL, CIH	5-27-93
MICHAEL G. WAGGONER		5/27/93
Cynthia Kyle-Fischer		5-27-93

EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

DATE: December 22, 1993

TO: D. W. Pontius, Geosciences,Bldg. 080, X8616

FROM: K. D. Anderson, Environmental Operations Management, Bldg. 080, X6979

SUBJECT: REVISION TO SITE SPECIFIC HEALTH AND SAFETY PLAN -KDA-103-93

The revision to Appendix B-3, Project Specific Health and Safety Plan for Soil Vapor Survey Work Plan, Revision 0, December 1993 has been approved by the Health and Safety Liaison Officer and the Environmental Restoration Health and Safety Officer. This modification must be incorporated into the Health and Safety Plan (HASP) as Filed Change Number 2, and distributed to all document holders as soon as possible. This change is effective upon receipt of this letter.

No other change may be made to the HASP without appropriate approval.

Concurrence:

M.D. Schreckengast for L.A. Nelowet — 12-22-93

L. A. Nelowet
Health and Safety Liaison Officer

Date

KDA

cc:
J. L. Anderson
J. M. Brooks
M. C. Broussard
K. E. Dyer
R. C. Gentry
M. D. Schreckengast
ERM Records Center (2)

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HEALTH AND SAFETY PLAN APPROVAL

Appendix B, Project-Specific Health and Safety Plan for Soil Vapor Survey Work Plan, Subsurface Interim Measures/Interim Remedial Action 903 Pad, Mound, and East Trenches Areas, Operable Unit No. 2, Revision 2, May 21, 1993, prepared by EG&G Rocky Flats and Applied Science, Inc.

This site specific health and safety plan has been written for the use of EG&G Rocky Flats, its employees and subcontractors. All personnel associated with the Project will comply with all aspects of the plan.

REVIEW AND APPROVAL

Craig Cowdery — 5/27/93
EG&G Project Manager — Date

J M Brooks by Bret M. Clawson — 5/27/93
Health and Safety Liaison Officer — Date

Kurt D. C — 5/27/93
Environmental Restoration Health and Safety Officer — Date

HEALTH AND SAFETY PLAN APPROVAL

The following signature documents that this division of EG&G Rocky Flats, Inc., has reviewed the Health and Safety Plan and agrees the requirements which are managed by this division has been addressed in a technically correct manner.

Health and Safety Plan Title:

Appendix B, Project-Specific Health and Safety Plan for Soil Vapor Survey Work Plan, Subsurface Interim Measures/Interim Remedial Action 903 Pad, Mound, and East Trenches Areas, Operable Unit No. 2, Revision 2, May 21, 1993

Note: This is an addendum to the interim approval of the previous plan Project-Specific Health and Safety Plan for Soil Vapor Survey Work Plan, Final, May 13, 1993.

Subcontractor Document	yes
EG&G Document	no

L A Welcomet
Industrial Hygiene

5/25/93
Date

HEALTH AND SAFETY PLAN APPROVAL

The following signature documents that this division of EG&G Rocky Lats, Inc., has reviewed the Health and Safety Plan and agrees the requirements which are managed by this division has been addressed in a technically correct manner.

Health and Safety Plan Title:

Appendix B, Project-Specific Health and Safety Plan for Soil Vapor Survey Work Plan, Subsurface Interim Measures/Interim Remedial Action 903 Pad, Mound, and East Trenches Areas, Operable Unit No. 2, Revision 2, May 21, 1993

Note: This is an addendum to the interim approval of the previous plan Project-Specific Health and Safety Plan for Soil Vapor Survey Work Plan, Final, May 13, 1993.

Subcontractor Document	yes
EG&G Document	no

Radiological Engineering

5/24/93
Date

50/50